



# JOURNAL

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ELIZABETH (standing), daughter of NAEB Fulbright, Keith Engar, concentrates on blocks at the Jardin des Enfants, Ecole St. James, during her family's stay in France.

ON THE COVER, shooting "The Secret of Flight" at the University of Iowa TV Center are Director Sam Becker (left) and Bill King, cameraman (right). The program, made for the Educational Television and Radio Center, features Dr. Alexander Lippisch (seated), aerodynamics engineer.



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# Professional Standards

We need to conduct vigorous discussions  
on our attitudes, methods of production

● THE PRODUCTION ASPECT of educational television is the area in which we as educational broadcasters are most vulnerable to criticism. Too often our colleagues describe us as follows: "Television is a marvelous electronic device but it has not yet become an educational instrument . . . . The people who manipulate the gadget will have to end their preoccupation with the technical rules which now regiment the studio and turn their attention broadly to the educational process and the role they can play in it."<sup>1</sup>

Or, "Many TV people seem to have their roots deeper in entertainment than education, and one frequently gets the impression that an interesting picture and lively presentation are more important than educational content and ef-

fects on people. It seems therefore particularly important that control remain with the professor rather than with TV technicians."<sup>2</sup>

We could possibly dismiss the latter as oblique academic empire building, except that the unkindest cut of all comes from our own

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By KEITH M. ENGAR

*NAEB Fulbright in France.*

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1. George A. Kelly, "Television and the Teacher," *The American Psychologist*; X (October, 1955), 590.

2. Charles J. McIntyre and Leslie P. Greenhill, "The Role of Closed-circuit Television in University Resident Instruction," *Ibid.*, p. 600.

ranks. One of the most distinguished of our number, Dr. Richard B. Hull, has bluntly said, "Educational broadcasting, we must admit, has not been a profession; it has been a devoted and confused pursuit by many people with many motives and many methods, and sometimes no methods at all, whose common goal rested in the belief that the great potentials in electronic sound and sight broadcasting must be harnessed for the educational improvement of mankind everywhere."<sup>3</sup>

If we are honest, we will have to agree with Mr. Hull's description—with perhaps the soothing rationalization that such comments are inevitable about a new profession with little chance to mature gracefully since its everyday activities are exposed for all to see. But are we honestly facing up to the criticisms directed toward us by those outside our field? Are we making any kind of concerted effort to create profes-

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### **What are the values in commercial TV which cannot be reconciled with ETV?**

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sional standards both as to our end products—the materials we broadcast—and our own performance of our duties? Surely we are, but no one would question that we could increase our collective efforts in

this area. We need to conduct vigorous discussions on our attitudes and methods of production.

We may attribute many of our professional difficulties to our glamorous sister, commercial TV, which has done such a magnificent work in persuading the American public to spend billions on TV sets, but in so doing has created an almost unbreakable stereotype as to the nature of the medium—TV is an entertainment medium.

Intellectually we know that TV is no more exclusively a medium for entertainment than a printing press is exclusively a medium for comic books, but in spite of what we may say, the commercial stereotype has had a pervasive influence on ETV presentations. Teaching of TV production in the colleges is oriented toward commercial usage and custom as can be verified by an examination of the most widely-used texts in the field. Since the production staffs of ETV stations are recruited most often from either the graduates of these courses or directly from commercial ranks, ETV production is inevitably channeled into commercial methods.

Is this objectionable? One may reason that TV production is dictated by the physical aspect of the medium which is practically the same for commercial and educational installations. If college TV courses limit themselves to the nuts and bolts of TV production, then one could raise no questions. How-

3. Richard B. Hull, "Consider Basic Problems," *AERT Journal*, XVI (December, 1956), 5.

ever, the catch is that TV production is more than knowing the difference between 135 mm and 90 mm lenses, or that a cut gives one a different psychological transition than a dissolve or fade. A TV director exercises a great deal of discriminative judgement, and in discharging his responsibilities he is influenced by deeply ingrained values. It is because the values in commercial TV are quite inimical to ETV that ETV production has been adversely affected by its subservience to commercial methods and we, a new part of the educational profession, are in danger of being considered a poor relation of our commercial sister.

This is no criticism of commercial TV. It is a magnificent institution and a key part of America's way of doing things.

However, we must bluntly say that ETV is not merely TV without commercials.

● WHAT ARE THE VALUES in commercial TV which cannot be reconciled with ETV? As any commercial station operator will tell you, he's in business to make money, and in order to make money, he must be able to sell time, and in order to sell time, he must be able to show that his station attracts large numbers of people. He pays close attention to statistical studies which purport to show how many viewers he has at a given time. On the network level, programming changes are frequently made on the basis of the popularity surveys. In fact,



Keith M. Engar

one may consider commercial programming efforts as a gigantic popularity contest, for the more viewers a network or station claims, the higher rates it may charge. Hence, programming personnel are consumed by a desire to please. The favorite industry slogan is, "We give the public what it wants."

In program presentation, the desire to please is evident on every turn. Performers are beautiful; scenery, props, and costumes are elaborate, or at least glittery; camera work is exciting enough to be appreciated as an independent art. Since the director generally has little to do with selection of materials he is to shape, the manner of production, the form, becomes his

special province. Indeed, since the day-to-day substance of commercial TV is so ephemeral, if not trivial, the way in which something is done becomes more important than the thing itself. Almost excruciating ingenuity must be exercised to develop different ways to say the same thing. LS/MFT for

tern if motivated by the same values.

We assert that ETV has values quite different from those of commercial TV, and while no one can categorize them into a neat little package, it is vitally important that we try to describe them during this crucial formative period.

We need ever to recall that the FCC created ETV in order to grant educators control over a medium of communication which could enable them to be more effective in achieving the educational goals of a democracy. Therefore, the basic purpose of ETV is to present useful information to every citizen who needs and wants it. A secondary purpose is to present entertainment of a high cultural level.

As an educational institution, ETV ought to be under no compulsion to think it must please all of the people all of the time. Obviously an ETV station as part of the democratic way of life will conscientiously strive to provide useful information or high-level entertainment for every citizen,

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**The ETV broadcaster  
should not be concerned  
with making educational  
material palatable; . . .**

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years on end. That this commercial concern about form has pervaded ETV is evident from the printed texts of some NAEB production workshops.

While the following point is not directly germane to what has been discussed, we should note that an inevitable result of the desire to please in programming is an abdication of local responsibility since syndicated and network features are more attractive than local programs, and hence able to command larger audiences. In effect a commercial station becomes little more than a carrier with insignificant contributions of its own to the daily schedule. Thus, control of TV program content tends to become concentrated in a relatively small group. It is obvious that ETV stations could conceivably follow the same pat-

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**. . . he is vitally concerned with making it understandable.**

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but ought to assume that this may be done for specific segments at any one time. A commercial program director has a case of hyster-



ics if a program's popularity rating is low. The commercial manager theorizes that if one program rating is low, the contiguous programs are also affected, and his salesmen have a harder time getting business. This is especially true of class "A" time segments. Essentially, the true worth of a program is assessed at its capacity to bring in money. As an old radio boss used to say, "If it ain't commercial, it ain't good." In direct contrast, an ETV station ought to consider the worth of a program according to whether or not significant information was presented to a significant segment of the population. Of course an ETV station must reach enough of the populace during any single broadcast to justify its existence, but it ought to reach that audience because it is imparting important information, not because it is offering pleasing divertissement.

The ETV broadcaster shouldn't be concerned with making educational material palatable. He is vitally concerned with making it understandable. Perhaps the difference is subtle, but it is nonetheless marked. Recent research in the technical aspect of communication may serve to underline the distinction.

A basic point in theory of communication is that information is inevitably subject to disorganization in transit; that messages come through in less coherent fashion and certainly not more coherently than they were sent. According to M. I. T's Dr. Norbert Wiener, in

communications "we are always fighting nature's tendency to degrade the organized and destroy the meaningful, the tendency, as Gibbs has shown us, for entropy to increase."<sup>4</sup>

The term "entropy" deserves our attention. According to Dr. Wiener's definition of this concept developed by Yale's Willard Gibbs, entropy is the measure of the probability that answers to questions about one set of worlds apply to a larger set of worlds. The characteristic tendency of entropy is to increase, and as it does, the universe, and all closed systems in the universe, tend naturally to deteriorate and lose their distinctiveness, to move from the least to the most probable state, from a state of organization and differentiation in which distinction and forms exist, to a state of chaos and sameness. In Gibbs' universe, order is least probable, chaos most probable.<sup>5</sup>

What has a theory of the physical world to do with ETV? Dr. Wiener has said, "Messages are themselves a form of pattern and organization. Indeed, it is possible to treat sets of messages as having an entropy like sets of states of the external world. Just as entropy is a measure of disorganization, the information carried by a set of messages is a measure of organization. In fact it is possible to interpret the information carried by a

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4. Norbert Wiener, *The Human Use of Human Beings* (Revised ed.; Boston; Houghton Mifflin Co., 1954) p. 17.

5. *Ibid.*, p. 12.

# A Visual Medium, but ...!

In concentrating on the camera  
have we neglected the microphone?

● RECENTLY, I HAD the opportunity to observe firsthand a network telecast of a short segment of an operatic work. The instrumental and vocal talent for the work, Wagner's *Parsifal*, being provided by the Indiana University School of Music.

For two days prior to the coast-to-coast broadcast, the director, employed by a network affiliate and functioning under strict instructions from the network, busied himself with the *video* considerations of the program. He directed the installation of five cameras, some of which had to be flown to the studio site from a station five hundred miles away, locating two on the stage, one in the wings, and two in the balcony; he blocked every shot meticulously, making sure that the same picture would not be held before the audience's eyes for more than a few seconds; he rehearsed the actors, concentrating his concern on the various aspects of visual vitality.

To the observer, he seemed to operate on the premise that the more often the actors moved, the better the representation of the idea.

Through all this — throughout these two days of video dedication — Wagner's music was ignored almost completely. To be sure, the pit orchestra played a little, and the singers sang a little; but the

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By DAN O'CONNOR

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playing and singing was but a means to the end of facilitating the actions of the cast which were captured by the camera. Although, as indicated above, the rehearsal was meticulous and exhausting; and although the balcony cameras were moved on several occasions to get better angle shots, never



were the three microphones, lined across the stage, adjusted for musical balance.

A few minutes before air time, the realization apparently came to the director that opera was in some vague way connected with the human ear. Removing his gaze from the monitor momentarily, he turned to address me: "Say, O'Connor, do you think the music will sound all right?"

"I don't know," I replied, shrugging my shoulders and glancing towards his pseudo-audio man. "I haven't heard it on the system."

"Help yourself," he said, pointing to the audio board.

I hesitated because I considered myself neither an audio man nor a musician. But after a moment I decided to don the headset the audio man extended to me, figuring that perhaps someone should give the music some attention, however unschooled that someone was.

Returning his gaze to the monitor, the director gave the cue for one last rehearsal so that he could watch and I could listen. What I heard was obviously out of balance. The orchestra practically drowned out the vocal efforts of the chorus and the soloists. After reporting this to the director, he instructed me to run out on the stage and make whatever microphone shifts I thought desirable. This request surprised me more than the previous one, for it seemingly ignored the existence of the many union-hands who had been the only ones to touch a camera or a flat or a light for the past two days. One

man per electron!

Again, however, I complied with his request, figuring that he could iron out the union-management disputes after the show and that whatever mike changes I made certainly could do the show no harm. I shifted the mikes closer to cast and returned to the director's station in the wings to await an audio check upon the changes I had made. No check came, but the network cue from New York to hit the air did. Whether Wagner or the video men won I am not in a position to report.

● BUT I AM IN A POSITION after this experience and many others like it, to conclude that television producers and directors, on the educational scene as well as the network one, have placed a much higher premium on what the camera sees than on what the microphone hears. In this conclusion, I refer as much to language and sound effects as I do to music. Why have they so subordinated the role of the microphone?

Perhaps because they have mouthed so frequently the expression, "Television is a visual medium" that they equate this to mean "therefore it is not an aural one." Or, at least, "therefore the aural is not so important as the visual." Needless to say, neither one of these conclusions leads logically from the fact of adding pictures to the broadcasting process. Indeed, the conclusions appear most ironical when reached by personnel



Dan O'Connor

who more often than not received their professional grounding in radio.

But there are many people involved in television, especially on the educational side, who moved into the field from disciplines other than radio. I refer specifically to the rather large group of television directors who were trained in audio-visual programs in our colleges and universities. Why have they, too, subordinated the microphone to the camera? Perhaps because such subordination is just an extension of what they had been doing in their audio-visual work. Since World War II, the term "audio-visual" has been a

misnomer in most training institutions. When used, it is intended to connote primarily, indeed sometimes exclusively, motion-picture production and utilization.

Personnel from the discipline of journalism have also crept into the television production field, especially in those institutions wherein the broadcasting activities are part of the journalism department. Although words retain more significance in our newspapers than in our TV programs, the ordinary newspaper man will readily repeat the old adage: "A picture is worth a thousand words." Of course, he is thinking of the still picture when he mouths the adage. Given that premise, and his level of reasoning, a TV picture made mobile by moving cameras and moving talent should be worth at least a million words!

Perhaps there is also a touch of good old American materialism in the values of producers and directors, whether these people have been inherited from radio or "audio"-visual centers, or journalism. After all, a camera costs one hundred times more than a microphone!

● **WHATEVER THE REASONS** behind this subordination of sound to sight, the practice is itself unsound. The disadvantages resident therein are reflected in many ways: One, in the reluctance of producers to use scripted material—that material which captures the pregnant, unforgettable phrase which cannot be emulated by most

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## Television May Be the Answer

● MANY TEACHERS, in the past, have feared radio, TV, and other audio-visual aids because of the effect the use of these media might have on their teaching posts. Individuals motivated by such fears contributed little to America's present standard of living. Nor will they raise present standards. History proves that progress is the result of vision. It cannot be halted by those motivated solely by a selfish interest in their jobs. Furthermore, it reveals that new occupations have always provided for those whom technological developments have displaced.

Today the fear should be not that teachers will lose their posts. The truth is that there will be nowhere near the number of qualified teachers required to staff tomorrow's classrooms. There is also the fear that, unless something is done, and soon, there will not be a sufficient number of classrooms to care for the youngsters now born who will reach school age in the years immediately ahead.

Dr. Alexander J. Stoddard has prepared for the Fund for the Advancement of Education, 655 Madison Avenue, New York 21, a 62-page pamphlet on this prob-

lem entitled "Schools for Tomorrow: An Educator's Blueprint." Any reader who is unaware of the critical situation which lies ahead for the schools should secure a copy. He will be greatly sobered after reading it.

● THE REAL ISSUE today is not whether TV can do the teaching job better than the teacher does at present. It is whether any way can be found to provide education for those who will soon reach school age. Many suggestions have been made. Liberal arts graduates could be trained; teaching aides might be utilized; television might be used. Dr. Stoddard believes that all three may have to be used if the schools are to meet their obligations. But he appears to look with greatest favor on the possibilities of television. Here is his brief summary of the problem:

"The use of television in the educational program, not only to supplement and enrich, but also to perform certain functions heretofore performed by teachers, and to cover areas of the regular curriculum as an integral part, offers great hope for meeting teacher and

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# A Report from Britain

● BRITAIN'S FIRST schools' television service will be on the air in May. In December 1956, within 15 months of the first commercial TV broadcast, Associated Rediffusion announced plans for an experimental period of eight weeks.

On May 13 these plans will materialize, beating the British Broadcasting Corporation's experimental schools' service by four months.

The company has appointed a council of advisers, under the chairmanship of the vice-chancellor of Reading University. Its 16 members, including headmasters, headmistresses, and representatives of teaching organizations and unions, will advise the company on the most suitable type of lessons for transmission. It will also consider all educational matters arising from television generally.

The lessons are aimed at 14-15 year olds, and will last for 30 minutes each day from Monday to Friday. So far, only a general outline is available. Each day will be devoted to a theme, each with a general educational background in view rather than a course in a special subject:

*Looking and Seeing* is designed to encourage children to realize how sketchily they look at the world about them.

*A Year of Discovery* introduces

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By SUSAN GILLILAND

*Tellex Publications Ltd.,  
London, England.*

---

the geophysical year, and explains the reasons for the struggle for scientific achievement.

*A Literary Programme* is designed to introduce a Dickens novel as something alive and exciting. (This will not be dramatized.)

*People Among Us* introduces children to immigrants living in Britain and encourages sympathetic understanding.

*On Leaving School* hopes to help children across the bridge from school to the adult world.

There will be no commercials in the period between 2 minutes before transmission of the lesson and half a minute after, unless the Independent Television Authority agrees. Road safety and National Savings are two which might be considered suitable.

The company responsible for the scheme serves the London area during the week. So far, the program will be networked to the Midlands. The Northern contractor awaits a more detailed syllabus

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## Publication Reviews

*JOURNAL OF BROADCASTING*, a quarterly periodical appearing in its initial issue, winter, 1956-57. Published by the Association for Professional Broadcasting Education. Format, 6 x 9, 112 pages exclusive of cover. Editor is Robert E. Summers, University of Southern California. \$5.00 a year.

● JUDGING FROM this first issue, *Journal of Broadcasting* seems destined to fill an important need among students of the broadcasting industry. There is a history of the Association, beginning with its predecessor, the University Association for Professional Radio Education, which dates back to 1947. There are reviews of six books; an analysis of broadcast literature which appeared in the *Quarterly Journal of Speech*, 1915-1955; and a list of universities and colleges offering degrees and/or substantial amounts of course work in radio and television.

The opening section of 20 pages is devoted to a discussion of "The Canon 35 Controversy," which, it

might be explained, relates to the question of photographing, broadcasting, or televising court proceedings. This section constitutes a digest of material taken from the *American Bar Association Journal*, September, 1956.

● THE REMAINING articles are all significant, interesting, and appropriate to a scholarly publication. They cover important areas relating to the communications media with which faculty members and other students of the field should be familiar. The AERT JOURNAL bids this new publication a hearty welcome and wishes for it a long, productive, and profitable life.

— TRACY F. TYLER, *Editor*.

*HANDBOOK OF BROADCASTING: THE FUNDAMENTALS OF RADIO AND TELEVISION* by Waldo Abbot and Richard L. Rider. Published (1957) by McGraw-Hill, 330 W. 42nd Street, New York, N.Y. ix plus 531 pages. \$6.50.

● COLLEGES AND universities searching for a sound text for use in courses introductory to broadcasting (radio and/or TV) need look no further.

Professor Abbot, with the assistance this time of Richard L. Rider, has brought up to date (Fourth Edition) this useful and

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# Multicam Film Production

This method of producing programs  
becomes more practical for ETV

● THE TERM "MULTICAM" has been used to designate the simultaneous operation of two or more cameras in the production of motion pictures. This type of production is of much wider use than is generally known. It has developed into such a successful method of producing programs for television that it is now a practical way for educational institutions to prepare programs for either educational or commercial television outlets.

One of the first multicam systems was described by Jerry Fairbanks in 1950.<sup>1</sup> He used three Mitchell 16mm cameras and an arrangement for switching on one camera while another was still running. Then, when the second camera was up to speed, the first camera was turned off. The cameras were automatically synchronized by special cue marks on the action film and the sound track film.

The Du Mont Electronicam sys-

tem has been used commercially for the past two years. This system uses a motion picture camera placed alongside a television

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By JOHN MERCER

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camera, and the two cameras have a common lens. Part of the light after passing through the lens is used by the television camera and the rest by the motion picture camera. A program can be handled exactly like a live television program, with the director calling shots and switching from one camera to another. A kinescope recording is usually made and used as a guide in editing the film from the three motion picture cameras,



which run continuously.<sup>2</sup>

A system similar to Electronicam has been developed by W. R. Smith Productions of Pittsburgh. It has been used by station WQED.<sup>3</sup>

CameraVision Productions in Hollywood has developed a highly ingenious system which uses a motion picture camera mounted beside a television camera. Separate lens systems are used, the television camera is the viewfinder, and intercamera parallax is corrected automatically by a special swivel device for the television camera.<sup>4</sup>

Numerous television programs have been produced by still different systems using two or more unmodified conventional cameras running continuously. The director relies upon careful rehearsal and the competency of his operative cameramen to obtain well composed pictures. The film is usually edited on a film editing machine which has a sound head and two or three picture heads. Well-known programs produced by this method are *I Love Lucy* and the Phil Silvers show. This system results in the use of more film than the one described by Fairbanks, but it allows much more freedom in editing and takes considerable pressure off the director, since he does not need to call shots at the time of the filming.

Telecine Productions, Inc., of Park Ridge, Illinois, uses a 16mm multicam system in which the cameras do not run continuously, but overlap each other automatic-

ally as the director switches from one to another.

An unusually elaborate system has been developed by the Moody Institute of Science in Hollywood. This system permits the use of two to four cameras, operating simultaneously, and is unique in that the film exposed in the four cameras can later be projected in synchronism on four projectors while an editor selects which shots he wishes to use by recording a cue tone on a magnetic tape. The system can then be projected again, with the cue tone operating "dousers" in front of the projectors so that only one image is seen at a time, according to the way the film was "edited"<sup>5</sup>

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*OVERLEAF: The set-up for bench-editing rolls of film shot simultaneously on two motion picture cameras. The bridge is used to allow the magnetic track to be passed under the two picture viewers, which must rest close together because of the close spacing of the synchronizer. Synchronizers with wider spacing can be made to order.*

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1. Jerry Fairbanks, "Film Production for Television," *Journal of the Society of Motion Picture and Television Engineers*, December, 1950, p. 567.

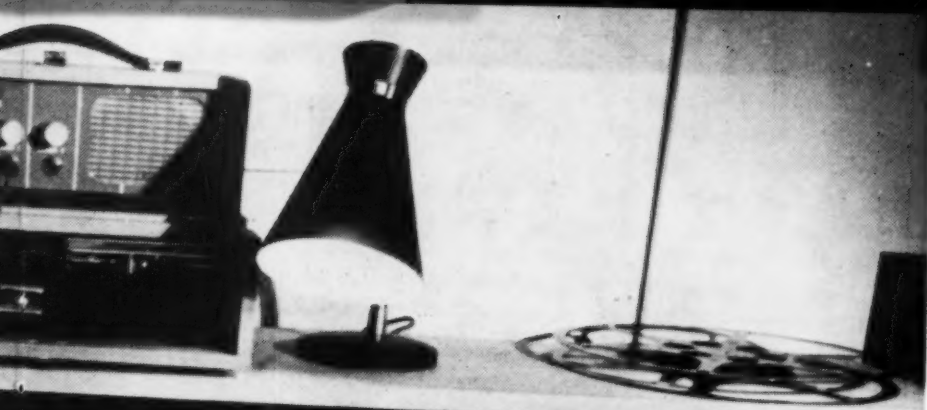
2. J. P. Shanley, "Bi-focal Camera," *The New York Times*, September 4, 1955, p. X9. Also Leigh Allen, "Gleason Goes Live on Film," *American Cinematographer*, October, 1955, p. 584.

3. "Tele-cam Used for Simulcasting Course in Physics," *WQED Program Previews*, November, 1956, p. 1.

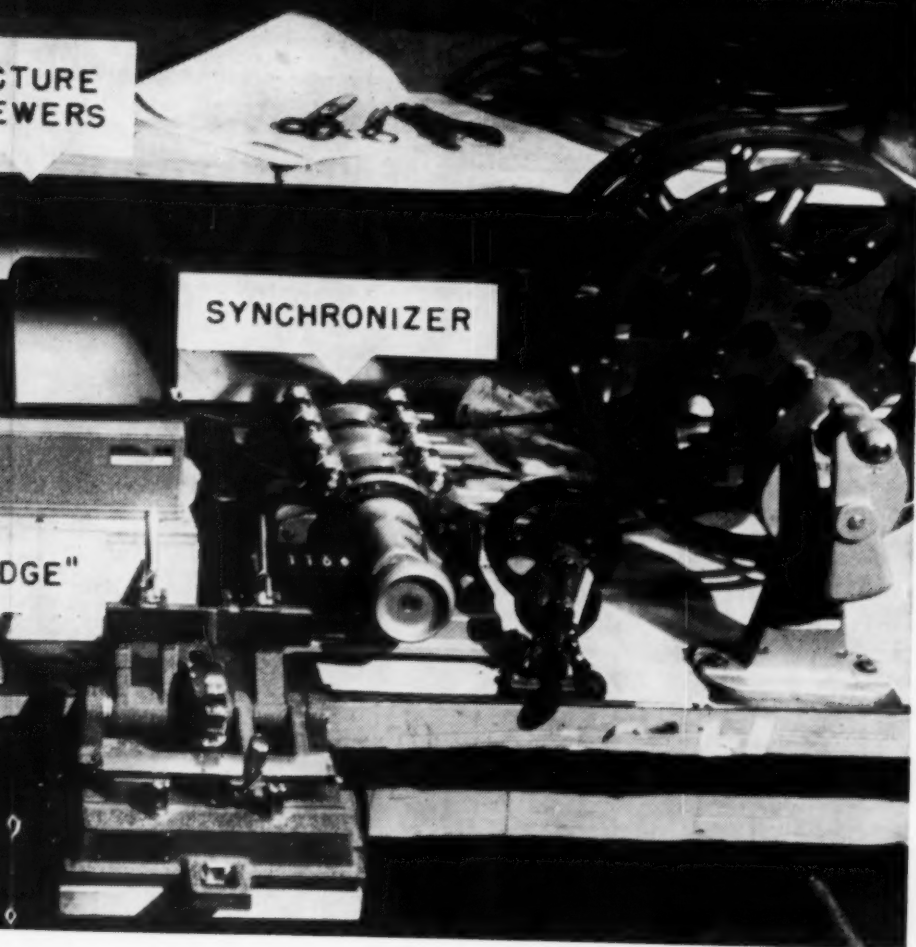
4. Frederick Foster, "CameraVision—New Video-Film System for Feature Production," *American Cinematographer*, June, 1955, p. 340.

5. "Multiple Camera System Combines Flexible Features of TV Systems," *Film and A-V World*, June, 1955, p. 294.





CTURE  
EWERS



APRIL 1957

At least two institutions of higher learning, New York University and Iowa State College, have produced programs using continuously running single-system 16mm cameras. Since the sound tracks produced by the two cameras are theoretically identical, the two strips of film can be used alternately with no loss of sound synchronism. In practice the two tracks may differ somewhat in volume and quality, however.

The University of Nebraska produced its *Great Plains Trilogy* by the multicam method. Educational television station KUHT-TV in Houston has produced a series on biology. The University of Iowa is using the system to produce television programs on aerodynamics and textile design, as well as non-television films in the area of teacher training.

● THE NEW FAST films (Eastman Tri-X and du Pont 931) have had much to do with making multicam technique successful. Tri-X can be developed in such a way that it is possible to use a lens stop of  $f/8$  on a set which has an illumination level of 165 foot-candles (ASA 500). A 25mm lens, stopped down to  $f/8$  and focused at 8 feet, has a depth of field of from 4 feet 5 inches to 40 feet. This largely eliminates the need for following focus. A 40mm lens, stopped down to  $f/8$  and focused at 8 feet, has a depth of from 5 feet 7 inches to 24 feet 8 inches. Hence medium shots and close-ups are easy to shoot on most sets. Ex-

treme close-ups can be shot after the program is completed and inserted later.

Thus it has become possible and practical to produce multicam films with unmodified equipment now available, as follows:

1 studio, stage, or large room of reasonably good acoustical qualities

1 set with furnishings

1 set of lights

1 synchronous 16mm magnetic film sound recorder

1 Lavolier microphone and cable

2 blimped 16mm cameras driven by synchronous motors, capacity at least 400 feet.

1 25mm lens

1 40mm lens

2 tripods

2 tripod dollies

1 slate with clappsticks

1 editing table

1 four-gang synchronizer

2 Craig-Kalart 16mm film viewers

1 McMurry magnetic sound reader

2 four-reel rewinds with reel spacers and locks

2 400-foot reel rewinds

1 Bell and Howell hot splicer

1 1/8-inch punch

Jefrona film cement

Scissors

Marking pencils

Supply of film reels (400 to 1200-foot sizes)

Film leader

Services of a good motion picture processing laboratory.

The following procedure for the use of the equipment listed above

is only one approach. Variations can be used where needs differ. Basically, however, we use the above equipment and the following procedure at the University of Iowa Television Center.

The usual type of television lighting is built up to a level of about 165 foot-candles, as indicated above.

For sound pick-up, we have found the Lavolier microphone very practical. Some persons object to the use of a neck microphone, but in many educational programs the presence or absence of a small microphone such as the Lavolier is of little importance. Where some sort of representational illusion is desirable, or if more than one person speaks, a microphone boom of some kind will be needed.

The film capacity of the camera requires careful consideration. If the camera holds only 200 feet, "takes" are limited to about five minutes. A 400-foot camera will run about 10 minutes, a 600-foot camera about 16 minutes, and a 1200-foot camera about 33 minutes. Our experience has indicated that cameras of 400-foot capacity are the minimum size from the point of view of operational convenience and performer continuity.

The Mitchell, Maurer, and Auricon cameras are all available in capacities up to 1200 feet. The Auricons are considerably less expensive, however. With a set of Auricon Pro 600's a 29-minute television program could be shot in two takes. With the Auricon Super

1200 it could be shot in one take, and in addition the Super 1200 features an internal rack-over device which permits parallax-free, through-the-lens focussing. The larger capacity of this camera also makes it desirable for certain kinds of record and research photography. All of the Auricon cameras are available as single system cameras, recording both optical and magnetic sound, and are widely used by television newsmen. All Auricons are self-blinded.

The Mitchell 16mm camera, which has the conventional type of rack-over, can be equipped with a follow-focus device on the blimp, and this device is in turn connected to the viewfinder in such a way that parallax is corrected automatically as the point of focus

John Mercer



is changed. On all of the cameras mentioned the viewfinder is so constructed, however, that when the image is in focus parallax is pretty well corrected.

Shooting a take is similar to television procedure, except that lenses are not ordinarily changed during the take. After suitable rehearsals, the magnetic recorder is started and brought up to speed, the cameras are started, the claps sticks are used, and the performance begins. Flip or roll-up titles can be used, or titles can be added later. If music is to be fed into the track, a disk or tape playback is needed.

The exposed film is sent to the laboratory where it is developed and workprinted. The original magnetic film can be edited, but usually a duplicate is used. Often the duplicate is better than the original, since volume can be leveled out to a certain extent in the re-recording process.

The two picture workprints and the magnetic duplicate are placed on reels for editing. The workprints are run through the Craig-Kalart viewers and the magnetic duplicate is run through the sound pick-up head of the McMurry reader. All three pass through the synchronizer and then into the take-up reels (see illustration).

The film is run through the viewers and marked for cutting. Using a grease pencil, the editor can indicate where he wishes to cut from one film to the other. After the film is marked, the viewers are removed. The two work-

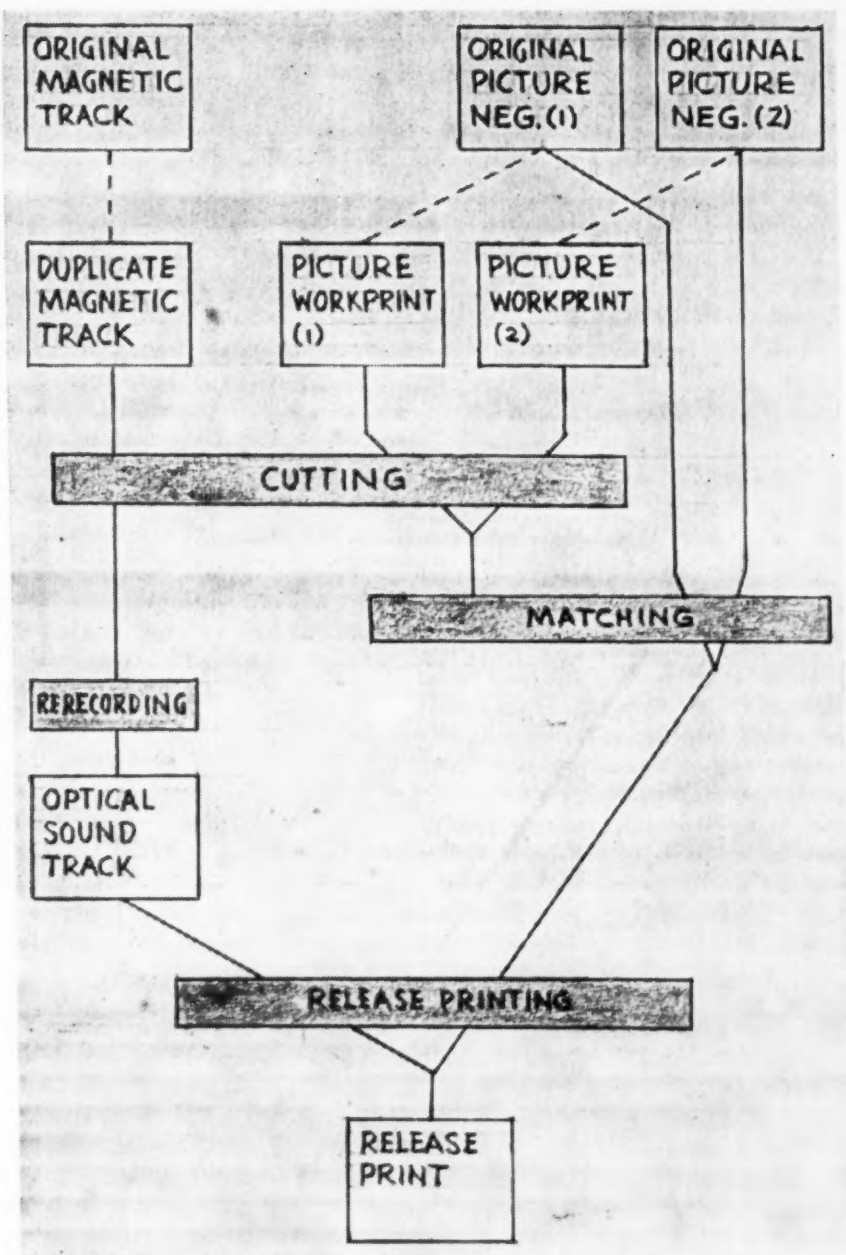
prints are run through again and cut directly opposite each other, but with a  $\frac{1}{2}$ -frame overlap, which results in no loss or extension of length. This cutting is done on the *right side* of the synchronizer because it is then easier to feed off the outtakes (unwanted film). After the film is spliced it can be checked by running it through a single viewer with the sound. After this the insert shots, if any, can be cut in.

To match the negatives to the edited workprint, the two negatives, magnetic duplicate, and picture workprint are run through the synchronizer, and the negatives are matched to the workprint by cutting again with the  $\frac{1}{2}$ -frame overlap. After this the insert negatives can be cut in. Most original camera negative stocks have latent-image numbers. These edge numbers are transferred to the workprints in printing and provide a means of constantly checking the matching.

The magnetic duplicate (or, if advisable, the matched magnetic original) and the picture negative are sent to the laboratory where the magnetic track is rerecorded to an optical sound track. From this track and the picture negative the release prints are made (see chart).

Splices in 16mm film can be seen on the screen, and are especially noticeable on prints made from a negative. A method of keeping the splices from showing is known as checkerboard cutting, but its use requires considerable





*Typical steps in multicam production are shown.*

time. It has been described in a publication of the recently formed Association of Cinema Laboratories. This publication was reported in the October, 1955, issue of *Film and A-V World*.

It would be logical to expect that someone would devise a printing arrangement whereby the two negatives would not have to be cut, but run through a special printer which prints only certain portions of the first negative, then fills in the rest from the other negative. Laboratories in New York and on the West Coast do offer this service, but the footage rate is several times higher than for straight printing. The same result can be obtained by preparing matte rolls, which are used by some laboratories.

It is possible to eliminate the need for workprints. If a small light in a housing is installed in a camera in such a way that when turned on it beams through a slit and exposes a stripe on the edge of film, the director can, during the performance, switch the light on and off whenever he wishes to "take" that camera. If only two cameras are used, there is no need for a light in the other camera. The sound track exposure lamp used in Auricon single-system cameras can be used for this pur-

pose, either by using the regular amplifier, a six-volt battery and switch, or current from a 115-volt outlet which is run through a transformer to step it down to six volts. The film is edited according to the position of the cue stripes.

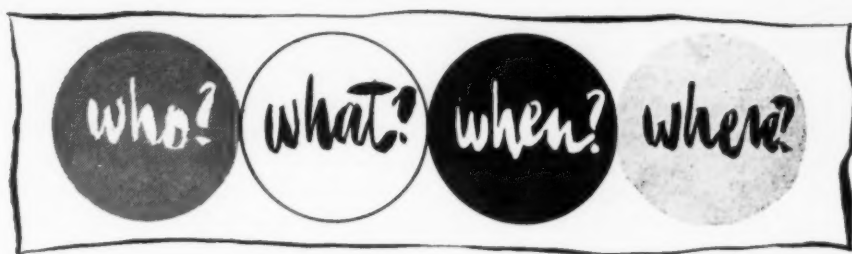
● MORE SPECIFIC information about filming equipment and procedures is available from the University Film Producers Association, which recently published a list of equipment graded for three types of production.<sup>6</sup> Chairman of the UFPA Committee on equipment is Mr. Ralph Sogge, Motion Picture Unit, Purdue University.

Institutions located where television outlets are not physically convenient should give considerable thought to the possibilities which multicam offers them. Although it is true that multicam film stock costs are higher than those for kinescope recording, the superior quality of the multicam product makes it especially desirable to consider seriously the use of multicam *before* a great deal of money is invested in kinescope recording equipment.

6. Ralph Sogge, "Production Equipment List (Revised, 1956)," *Journal of the University Film Producers Association*, Spring, 1956, p. 5.

*NO BUBBLE is so iridescent or floats longer than that blown by the successful teacher.*

—SIR WILLIAM OSLER



● THOSE INTERESTED in gaining a foundation in television production coordination are invited to Michigan State University's Seventh Annual Summer Television Workshop from August 5 to 23.

Designed for the educator, school administrator, community leader, and those in the television industry, the Summer Workshop covers two primary areas:

Directing Theory and Practice for advanced students who have completed previous workshops at MSU or have acquired an equivalent background in TV directing and control room operation.

Fundamentals of Broadcasting is presented for those who have had little contact with the medium and would like to learn more about it. In addition, Studio and Control Operation will be taught in the WKAR-TV studios.

Four credits are offered to either graduate or undergraduate students. The Workshop may also be taken for non-credit.

For reservations or additional information contact: Mr. William H. Tomlinson, Co-director Television

Summer Workshop, Department of Speech, Michigan State University, East Lansing.



● A KINESCOPE of the first meeting of America's best-known science writer with a world-famous Indiana University scientist had its initial presentation from the Indiana University television studios over station WTTV February 27.

William Laurence, science editor of the *New York Times*, visited the I. U. campus and met for the first time Vaclav Hlavaty, I. U. expert on relativity. A kinescope was made of their conversation.



● American forces, and other residents of Korea, both American and Korean, will have U. S. TV programs by July 1, 1957, according to official reports. The U. S. Army began constructing its own station in the Yongsan area of Seoul on March 15. Transmission equipment is scheduled to arrive on May 1, with operation scheduled to begin two months later.

The 500-watt transmitter, it is predicted, will be powerful enough to reach deep into Communist North Korea and perhaps into Red China.

This new station will provide additional TV programs for Korea which is now served by a commercially-operated station erected a year ago by the Korea RCA Distributor's Corporation.



*By HENRY CHAUNCEY,  
president, Educational Testing  
Service, Princeton, New  
Jersey, annual report to board  
of trustees.*

● ONE OF THE MOST effective ways to provide means for independent study is through educational television, and a logical development in this area, already being tried out, is offering entire courses over TV. The most ambitious venture to date is taking place in the city of Chicago, which is providing a complete junior college program over TV, available to enrolled students and to the public alike.

Television is also in experimental use in the conduct of courses in school and college classrooms. Such courses range from those which merely put a teacher in front of the camera, to integrally planned programs whereby the audio-visual medium, textbooks, workbooks, independent projects, and tests and examinations, all are used together to achieve maximum effectiveness. In the latter case each element contributes in ways in which it uniquely can. The teacher has far

greater resources at his command than ever before and is able to devote a much greater proportion of his time to planning the educational experience that will be most profitable for individual students. Such a program is getting underway in St. Louis, where Washington University will this fall offer a college mathematics course by television, supplemented by "help sessions" on the campus. The 45-minute lectures by the University's most experienced and able mathematics teachers will be repeated five times daily—twice a day over the community ETV Station, KETC, and three times daily via closed-circuit television on the campus. "Help sessions" will be scheduled almost continuously from 8 a.m. to 10 p.m. on weekdays so that assistants in the mathematics department, who formerly spent their time lecturing to twenty different sections, will be available to give individual explanations of the lecture and the text material and to help in working assignments. This program enables the students to listen to lectures several times, if necessary, and to receive as much additional explanation and assistance as they need.

Unfortunately, however, teachers are not always available. This is the case with science courses in many high schools today. The "packaged program" can be of great use by itself. A blending of instruction by television with the more conventional correspondence methods seems to be a fruitful area for exploration. In Alabama,

for example, several hundred high school students in schools which did not offer solid geometry studied this subject by television, submitting their written work to the extension service of the State University for correction and grading. Nebraska is also experimenting with a similar arrangement in teaching high school algebra. Special emphasis is being directed to the problem of individual differences and how they may be allowed for in this type of instruction.

It is significant that plans are currently being made to film some of these courses so that they may be presented again and again on television or by motion picture projection. In Pittsburgh, Professor Harvey White, an outstanding teacher of physics from the University of California, will be giving a complete course in high school physics by television. Color films are being made of each of his half-hour lectures and demonstrations—about 175 in all. These will be distributed commercially for use in other sections of the country beginning in February 1957. The far-reaching results of such courses might include acceleration in school grades, independent study for adults in their free time toward a bachelor's degree, and continuing self-education throughout a dult life. With tests used constantly for purposes of validation, the courses should be capable of almost infinite development over the years ahead.

Finally, tests are practically in-

dispensable in the precise evaluation of experiments in methods of teaching. As techniques change (and the use of television is only one example of new approaches which may be devised), tests can help determine which are the most effective. They can also isolate particular factors in good or poor teaching.

## Visual

*Continued from page 10*

ad-libbers; two, in their willingness to let unbalanced music or inarticulate speech or unconvincing sound affects reach the ears of their listeners; and three, in their efforts to get the telecourse instructor to bounce up from his desk occasionally and trot to the flannel-graph where he sticks on a simple symbol, and otherwise make the talent walk and the program "move." As TV critic Bill Ladd, of the *Louisville Courier Journal* remarked recently, "It's high time they realized that ideas can get up and walk!" Such ideational strutting would of necessity be passed along to the audience via the microphone.

In conclusion, I would appeal for a return of the pendulum swing toward the middle. In the television medium, normally we don't need sound without sight or sight without sound. What we need is a much better balanced integration of the two senses we currently have.

## Reviews

*Continued from page 13*

widely-used manual for students enrolled in radio and television courses in colleges and universities. Many high schools also will find it useful as a reference book in speech classes.

Ever since the publication of the first edition (1937), Abbot's *Handbook of Broadcasting* has been a leader in its field. The writer has found it useful as a reference book in his classes in radio and television education even though it deals primarily with preparation for broadcasting as a vocation rather than as a textbook for assisting teachers in more effective classroom utilization.

● THE FOURTH edition has been substantially enlarged, more profusely illustrated, and greatly strengthened through the addition of six entirely new television chapters, as well as through the addition of television material, where indicated, to existing chapters.

The authors address themselves to their task fortified by an ideal background of experience in teaching and broadcasting, both educational and commercial in both media. The success of three previous editions, together with an analysis of the present volume, convince the writer that it will be widely accepted for use in college classes wher-

ever courses in radio and television are offered.

— TRACY F. TYLER, *Editor.*

## Answer

*Continued from page 11*

building shortages, but more important, for raising the level of teaching. There is already no doubt about the great effectiveness of television as a teaching medium. It is being used widely at the college level. Its use in the schools is not very extensive as yet because of problems of adapting teaching techniques, rearrangement of instructional groupings, practical difficulties involving schedule making, and the challenge of presenting dynamic television programs. But these roadblocks can and will be surmounted as more experimentation takes place in these areas—they are not insurmountable."

This is a challenge from an eminent educator who retired from the superintendency of the Los Angeles schools in 1954 after 44 years as a school administrator. This cannot be dismissed as the propaganda of another TV enthusiast. These are reasoned conclusions from one who has devoted his entire life to the American public school system. Surely they deserve the thoughtful consideration of educators everywhere. Television may be the only answer to our present problems unless mil-



lions of boys and girls are to be denied their educational birthright in the years that lie ahead. We must all be willing to assist in experiments designed to discover how television can be used most effectively in the present crisis.

—TRACY F. TYLER, *Editor*.

## Britain

*Continued from page 12*

before making a decision.

If the experiment is successful, the lessons could be transmitted to two further areas by the autumn—Scotland and Wales. But by that time the BBC lessons—three a week—will also be on the air, and commercial TV's latest recruits may decide to be content with these.

● **HOW MANY SCHOOLS** will these lessons reach? It's impossible to estimate. Before Christmas, the Ministry of Education was planning the installation of up to 300 sets by the autumn of 1957, ready for the BBC's educational programs. With the announcement of a commercial service starting in the spring, some adjustment had to be made. The possibility that commercials might be included in the lesson time antagonized a number of county councils, who announced they would not support the experiment.

But now the situation is brighter. They have been promised that

this will not occur. And the television tube manufacturers are starting a campaign to get sets into the schools by May.

Associated Rediffusion is hoping that as many as 1,500 to 2,500 sets may be installed by that time, although only a handful of schools can boast sets as yet.

Some which fail to get grants to buy sets are expected to rent. One eager school is already the proud possessor, after pupils instituted a voluntary penny-a-week fund. Another is asking parents to donate a set.

How much would these cost? A reliable receiver with a 21" screen can be bought for £95. The highest price is somewhere around £195, and the average price is £130. Most popular screens are 21", 24", and 30". 21" is the minimum allowed for schools' viewing.

Five producers have been appointed, each of whom will be responsible for one program. Their general aims are to supplement rather than supercede the work of the teacher, to present subjects in terms of genuine and sincere documentation, to present them in a way which leaves the class with the sense of challenge and excitement, and to attempt a wide range of TV experiment.

The field is wide open for them. Enthusiasts and pessimists will watch with equal interest, for it is another step in the history of British communications.

EDITOR'S NOTE: The British pound sterling is currently quoted at \$2.80.

# Professional Standards

*Continued from page 7*

message as essentially the negative of its entropy, and the negative logarithm of its probability. That is the more probable the message, the less information it contains. Cliches, for example, are less illuminating than great poems."<sup>6</sup>

In those terms, the basic problem of the ETV director is to organize his messages—program materials—so that the essential information will be communicated to his audience. There is no place for ornament in such a functional concept of presentation. One judges production details on their contribution to message, not according to their aesthetic appeal.

There is admittedly a great risk involved in the above approach to ETV. Were production to be so stark that one would merely place a professor in front of a camera and say, "Talk!" the probability of dullness and thus ineffective communication via the medium would be overwhelming.

On the other hand, if ETV were to be entertainment-oriented and each production considered a "show" with the director an artist who must impinge his creative impulses on every dot of the screen, essential information would be buried in a matrix of gimmicks.

If the ETV director is to be worthy of his potential calling, he must be able to utilize the inherent

advantages of the TV medium without losing sight of his fundamental objectives: to communicate useful information to citizens who need and want it. He cannot forget about form of presentation any more than a writer can, but he must not be dominated by mere mechanics. An ETV director who spends excessive energy on studio routine is as pedantic in his way as the hoariest English grammarian.

● AN ETV DIRECTOR'S first requisite ought to be a highly developed critical faculty which would enable him to evaluate the communications skill of the other educators with whom he'll work. He must have the creative ability to provide the most effective avenue for information to travel from source to receiver. He must interest more through movement of ideas than through movement of cameras.

Thus, the ETV director exercises a powerful influence in improving teaching standards for he is constantly evaluating the communications process. If he is to be worthy of his calling, he must be an educator himself. He won't deserve the confidence of his academic colleagues if he is considered an entertainer.

Perhaps we ought to develop a

new terminology for the functions of ETV personnel. "Producer" and "director" smack of Hollywood and the entertainment stereotype. Actually, "editor" would be a more accurate description of the activities now performed by ETV "directors."

The very practical point might well be raised that while all the above is very nice, still one couldn't expect University courses in TV production to ignore commercial methods and orientation. After all there are many more jobs for graduates in commercial than educational TV. Why not prepare them for the milieu in which they'll work?

One may answer by pointing out how other professions with specialized areas give a basic course for all students in the early part of education, but permit concentration on a particular aspect in upper division or graduate work.

However, to assume, as apparently many educators do, that commercial TV methods and attitudes are basic to the medium is an abdication of a college's responsibility. When a college department is content to teach so-called commercial methods as practised in New York network or metropolitan stations—and most of our textbooks are little more than mere descriptions of such operations—one is saying, "You lead, I'll follow." A college is turned into a trade-school, and a half-baked one at that.

Far-fetched as it may seem at the moment, preparation for ETV

(and possibly commercial TV) must someday assume a thoroughness comparable to that of present-day medical training with all the implications of standards and research. Dr. Wiener has pointed out that communications are the life-sinews of a society and that society can only be understood through a study of its message and communications facilities. "The study of communication has now reached a degree of independence and authority making it a science in its own right."<sup>7</sup> While he refers to the technology of communications, we may consider the social aspect to be even more deserving of a specific discipline. There is an urgency about this new science because technological developments have created a brand-new world. According to Dr. Wiener, "We have modified our environment so radically that we must now modify ourselves in order to exist in this new environment. We can no longer live in the old one."<sup>8</sup>

Considering the complexity of this new environment, those in ETV today are like cave men writing crude pictographs on dimly lit walls compared to rigorous discipline in the social and physical sciences relating to communications in addition to a thorough education in the humanities. At least in ETV the days of the "intuitive artist" director are as numbered as were those of the old-time aviator who boasted he could fly

6. *Ibid.*, p. 21

7. *Ibid.*, p. 16

8. *Ibid.*, p. 46

by the seat of his pants.

We have compelling reasons to equip ourselves for the new problems imposed by the age, for as Dr. Wiener puts it, "We are in an age where the enormous per capita bulk of communication is met by an ever-thinning stream of total bulk of communication. More and more we must accept a standardized inoffensive and insignificant product, which, like the white bread of the bakeries, is made rather for its keeping and selling properties than for its food value."<sup>9</sup> Chief Justice Warren once said that the strength of America is its diversity. If that is true, we ought to be a key group in keeping America strong, but unless we develop methods suited to our specific purposes, we shall be dangerously ineffective. We have a new medium. Let's think in new terms about it.

In order to illustrate how a functional ETV orientation might work in practice, the following specific examples are cited:

1. Settings, props, or costumes which don't directly add to the essential content of a presentation ought to be eliminated. It is difficult to justify spending time, energy, and money on items of secondary importance. How often does one see such visual clichés as a study set with books, globe, and window looking out on a painted campus scene.

However, if a prop is essential, it ought to be functional in its design. For example, not just any table will do for a discussion. Most tables with their horizontal emphasis tend to force discussants to assume artificial postures when trying to include the camera as well as colleagues. A functional table would con-

tribute to the coherence of the communication by eliminating the necessity for distracting head movements.

2. Lighting which equates all the areas of the screen tends to disorganize information. It would seem that judicious key lighting would contribute to message organization. However, low-key lighting must be handled carefully lest it call attention to itself. As a corollary, background draperies which are close in gray-scale value to the face contribute to visual incoherence. It would seem that a dark background with careful lighting would emphasize the essential object economically and efficiently.

3. It is more important for audio to be clear and free from extraneous noise than for a microphone to be concealed. In ETV, the closer the mike to the speaker, the better communication. However, if for some reason a boom mike must be used, it becomes essential to avoid a boom shadow or obtrusions of the mike into the picture solely on the grounds that such images distract.

4. Arbitrary switching from camera to camera, or arbitrary camera movement, are common faults in any local TV operation. Too often, especially in an unrehearsed situation, a director cuts from one camera to another on the whim that such a change *might* be more interesting. Camera work ought to be motivated in the following terms: does a change contribute to understandability.

5. One needn't be cowed by the professor's fond belief that a straight lecture is the purest way to dispense knowledge, and that anyone who suggests other means of communication is trying to weaken content. It is in this area we need to exercise greatest caution. If we understand the communication processes ourselves, we may tactfully explain that words are but one means of communicating ideas, and that use of visual or other aural symbols is not sacrificing content to make it palatable. Textbooks clarify with illustrations, and so may the professor. However, we ourselves must not become so doctrinaire that we can't admit that some professors can communicate most effectively by verbal means. Unfortunately, such individuals are as rare as Dr. Baxter.

9. *Ibid.*, p. 132.

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